Nonlinear and Adjustable Bushings

Claims

1. A bushing for mechanically connecting two mechanical components so that to allow specified relative motions along at least one translational and/or angular coordinate, comprising:
   - outer sleeve;
   - inner sleeve inserted into said outer sleeve;
   - rubber insert disposed between said outer and inner sleeves;
   - said rubber insert comprising a plurality of streamlined rubber elements

2. The bushing of Claim 1 wherein at least one of said streamlined rubber elements is preloaded in compression

3. The bushing of Claim 1 wherein at least one subset of said plurality of streamlined rubber elements is integrated into at least one specified package by means not affecting compression characteristics of said streamlined rubber elements

4. The bushing of Claim 3 wherein said means constitute tacking of said elements to the outer sleeve

5. The bushing of Claim 3 wherein said means constitute thin membranes attached to said elements

6. The bushing of Claim 3 wherein said means constitute embedding said elements into soft foam matrix

7. The bushing of Claim 2 wherein said preloaded rubber elements are precompressed and frozen below their glass transition temperature before the insertion

8. A bushing for mechanically connecting two mechanical components so that to allow specified relative motions along at least one translational and/or angular coordinate, comprising:
- outer sleeve;
- inner sleeve inserted into said outer sleeve;
- preload-application shoes disposed between said outer and inner sleeves;
- compression load actuators disposed between said outer sleeve and said preload-application shoes
- rubber insert disposed between said preload-application shoes and said inner sleeve;
- said rubber insert comprising a plurality of streamlined rubber elements

9. The bushing of Claim 8, wherein said preload-application shoes comprise several segments, each segment being acted upon by at least one said compression load actuator